

APPENDIX F. Past, present and reasonably foreseeable future actions contributing to cumulative impacts of coastal and tidal inlet habitats between Cape Henry, VA, and Cape Romain, SC.

The effects of past, present and reasonably-foreseeable future events may have positive and negative cumulative impacts on coastal fish and wildlife resources. A preliminary list of coastal projects that may be affecting fish and wildlife resources of management concern is provided in Table F-1 as a means of scoping a cumulative effects assessment for coastal resources.

The spatial boundaries of this preliminary list span from Cape Henry, Virginia, to Cape Romain, South Carolina, because the coast between those two capes contain the overlapping breeding and overwintering ranges for several shorebirds and colonial waterbirds of very high or high management concern. This spatial area also contains the northernmost range for nesting loggerhead sea turtles and the spawning area for several fishery resources.

The temporal boundaries for this preliminary list range from the earliest construction dates of shoreline stabilization projects, through the present, to 50 years into the future (the typical planning life of a federal shore protection project). Projects are considered reasonably-foreseeable future actions (RFFA) if they have been formally proposed, environmental documents have been prepared or are being prepared, or the relevant authorization and/or permits have been obtained but construction has not started. The assumption is also made that privately sponsored projects that have occurred in the recent past and/or present are likely to continue to occur in the future. Table F-1 contains a preliminary list of these projects and actions for the purposes of scoping a cumulative effects assessment, and the list may be supplemented, edited or shortened as a full cumulative effects assessment proceeds.

The guidelines for conducting a cumulative effects assessment by the Council on Environmental Quality (CEQ) and impacts assessment literature (e.g., CEQ 1997; Canter and Kamath, 1995) suggest using a resource perspective, and for this preliminary assessment avifauna are the resource of concern. Projects or actions considered herein are those that may have had an effect (positive or negative) on the habitat for breeding, foraging, roosting and/or loafing shorebirds and waterbirds during nesting, migration and/or overwintering periods.

The types of projects or actions included in this preliminary assessment are those that have been implemented or proposed by private, local, regional, state or federal entities. Actions may include policies, plans, programs, projects or permitted events (CEQ 1997; Canter and Kamath 1995). Consequently, activities such as beach driving, waterfowl impoundments and bird exclosures are included as permitted events in individual counties, towns or national seashores, programs to enhance bird habitat, and projects to improve avian reproduction success respectively. Since bare ground areas are an important microhabitat for shorebirds and waterbirds, vegetation plantings and the artificial creation of dunes (via sand fencing or beach scraping) are included as they alter the distribution and abundance of the bare ground microhabitat. Hard stabilization projects such as seawalls, revetments, groins and jetties are included as they modify and sometimes eliminate ephemeral microhabitats (e.g., overwash fans,

spits, and foredunes). Dredging projects are included to the extent that they modify tidal shoals, inlet hydrology, and inlet shoulders; inlets are a preferred habitat for many bird species. Beach nourishment or storm damage reduction projects are incorporated in the preliminary list due to their modification of oceanfront beach microhabitats for foraging, nesting and loafing.

A full cumulative effects assessment would include other resources (e.g., fishery resources, SAV, hardbottoms, marine mammals) as well. Each project or action listed in Table F-1 should be assessed for the magnitude of impact(s) relative to the other actions on each resource of concern. Impacts may be positive or negative and may be direct, indirect, incremental, additive or synergistic in origin (Canter and Kamath 1995). The assessment may rank impacts as low, medium or high magnitude if quantitative assessment methods or thresholds are not readily available. Some actions and resources may need more intensive analysis than others, and the temporal and spatial boundaries may differ for each resource.

Table F-1 provides a starting point for a cumulative effects assessment for coastal fish and wildlife resources resulting from many past, present and reasonably-foreseeable future projects and actions.

Table F-1. A preliminary list of past, present and reasonably-foreseeable future actions (RFFA) that may affect the coastal habitats of shorebirds and waterbirds. The list is presented from north to south and spans the area between Cape Henry, Virginia, and Cape Romain, South Carolina, which bracket the breeding, migratory stopover, and overwintering ranges of several shorebirds and waterbirds of concern (e.g., evaluation species in Table 4). Past events cover those of approximately the last century (the period when dredging and shoreline stabilization began), and future events include those reasonably foreseeable to occur within the next 50 years (the typical planning life of a federal shore protection project). The time period of occurrence (past, present or RFFA) is marked for each project or action, while the magnitude of the impact(s) to avifauna need to be assessed by a consensus of a resource agencies and partners.

Project	Past	Present	RFFA	Magnitude
Fort Story Geotubes	X	X		
Fort Story Revetment	X	X	X	
Virginia Beach Beach Nourishment	X	X	X	
Rudee Inlet Jetties & Dredging	X	X	X	
Dam Neck Naval Base Rock Revetment/Dune	X	X		
Dam Neck Naval Base Beach Nourishment	X			
Sandbridge Seawalls	X	X		
Sandbridge Beach Nourishment	X	X	X	
Currituck County CCC Dune Ridge	X	X		
Currituck County Beach Driving	X	X	X	
Dare County Beaches North Beach Nourishment			X	
Nags Head/Kitty Hawk Dredge Disposal		X		
Cape Hatteras National Seashore Bird Exclosures	X	X		
Bodie Island Beach Driving	X	X	X	
Oregon Inlet Dredging & Disposal	X	X	X	
Oregon Inlet Terminal Groin	X	X		
Oregon Inlet Jetties			X	
Pea Island Waterfowl Impoundments	X	X		
NC 12 Dune Maintenance - Hatteras Island	X	X	X	
Rodanthe Dredge Disposal	X			
Albemarle-Pamlico-Core Sounds Dredge Disposal Islands	X	X	X	
Avon Dredge Disposal	X			
Buxton Inlet Closure	X			
US Navy Groins	X	X		
Cape Hatteras Lighthouse Sandbags	X			
Hatteras Island Beach Driving	X	X		
Hatteras Dredge Disposal	X			
Hatteras Inlet Dredging	X	X		
NC 12 Dune Maintenance - Ocracoke Island	X	X	X	
Ocracoke Island Dredge Disposal	X		X	
Cape Lookout National Seashore Beach Driving	X	X	X	
Drum Inlet Opening & Dredging	X			
Core Banks Dredge Disposal	X			
Cape Lookout National Seashore Dune Building	X	X	X	
Vegetation Plantings on Outer Banks	X	X	X	
Barden Inlet Dredging	X			
Cape Lookout Jetty	X	X		

Project	Past	Present	RFFA	Magnitude
Shackleford Banks Jetty	X			
Beaufort Inlet Dredging	X	X	X	
Beaufort Inlet Nearshore & Offshore Disposal Sites	X	X	X	
Fort Macon Jetty & Groins	X	X		
Atlantic Beach Dredge Disposal	X	X	X	
Pine Knoll Shores Dredge Disposal	X	X	X	
Carteret Co. Bogue Banks Beach Restoration Project		X	X	
Emerald Isle Dredge Disposal	X	X	X	
Bogue Banks Beach Scraping	X	X		
Vegetation Planting in Onslow Bay	X	X	X	
Onslow Bay Dredge Disposal Islands	X	X	X	
Bogue Inlet Dredging	X	X	X	
Bogue Inlet Relocation			X	
Camp Lejeune Target Ranges	X	X	X	
Camp Lejeune Beach Nourishment			X	
Onslow Beach Dredge Disposal	X	X	X	
New River Inlet Dredging	X	X	X	
North Topsail Beach Dredge Disposal	X	X	X	
Topsail Island Dune Maintenance	X	X	X	
Topsail Island Sand Bags	X	X	X	
Topsail Island Beach Scraping	X	X	X	
Topsail Island Beach Nourishment			X	
Topsail Beach/West Onslow				
Beach Nourishment & Terminal Groin			X	
New Topsail Inlet Dredging	X	X	X	
Topsail Beach Dredge Disposal	X	X	X	
Rich Inlet Dredging	X	X	X	
Figure 8 Island Sandbags	X	X	X	
Figure 8 Island Beach Scraping	X	X	X	
Figure 8 Island Beach Nourishment	X	X	X	
Mason Inlet Relocation		X	X	
Mason Inlet Sandbag Revetment	X	X		
Wrightsville Beach Beach Nourishment	X	X	X	
Moore Inlet Closure	X			
Masonboro Inlet Jetties & Dredging	X	X		
Masonboro Inlet Channel Closure	X			
Masonboro Island Dredge Disposal	X	X	X	
Carolina Beach Inlet Opening	X			
Carolina Beach Inlet Dredging	X	X	X	
Carolina Beach Revetment	X	X		
Carolina Beach Driving	X	X		
Carolina Beach Beach Nourishment	X	X	X	
Kure Beach Beach Nourishment	X	X	X	
Fort Fisher Revetment	X	X		
Fort Fisher Driving	X	X	X	
Bald Head Island Groins (West Beach and marina)	X	X	X	
Bald Head Creek Dredging and Terminal Groin			X	
Bald Head Island Geotubes	X			
Bald Head Island Beach Scraping	X			
Bald Head Island Dredge Disposal		X	X	
Bald Head Island Beach Nourishment	X			

Project	Past	Present	RFFA	Magnitude
Cape Fear River (Wilmington Harbor) Dredging	X	X	X	
Caswell Beach-Oak Island Beach Scraping	X			
Caswell Beach-Oak Island Sandbags	X	X		
Caswell Beach Dredge Disposal		X	X	
Caswell Beach-Oak Island Vegetation planting	X	X	X	
Long Beach Sea Turtle Habitat Restoration Project		X		
Oak Island Beach Nourishment			X	
Oak Island Dredge Disposal	X	X	X	
Lockwood's Folly Inlet Dredging			X	
Holden Beach Sandbags	X	X		
Holden Beach Beach Scraping	X			
Holden Beach Dredge Disposal	X	X		
Holden Beach Beach Nourishment		X	X	
Long Bay Dredge Disposal Islands	X	X	X	
Shallotte Inlet Dredging	X	X	X	
Ocean Isle Dredge Disposal	X	X		
Ocean Isle Beach Nourishment		X	X	
Ocean Isle Beach Scraping	X			
Ocean Isle Sandbags	X	X		
Tubbs Inlet Dredging			X	
Tubbs Inlet Relocation	X			
Sunset Beach Scraping	X			
Little River Inlet Jetties	X	X		
Cherry Grove Revetment	X	X		
Hog Inlet Dredging	X	X		
North Myrtle Beach Beach Nourishment/Dredge Disposal	X	X	X	
Myrtle Beach Beach Nourishment	X	X	X	
Myrtle Beach Seawalls & Revetments	X	X		
Surfside Dredge Disposal	X	X		
Garden City Beach Nourishment	X	X	X	
Murrells Inlet Jetties	X	X		
Murrells Inlet Dredging	X	X		
Huntington Beach State Park Beach Nourishment	X			
Midway Inlet Groins	X	X		
Pawley's Inlet Dredging ?				
Pawley's Island Beach Nourishment	X			
DeBordieu Island Beach Nourishment	X			
DeBordieu Island Seawall	X	X		
Winyah Bay Mouth Dredging	X	X		
Winyah Bay Mouth (Georgetown Harbor) Jetties	X	X		
Santee River Diversion ?	X			